

Combined Agency Data

The number of incidents reported to agencies and calls made to WPC for the years 1999-2003 is listed in Table 5. There is no clear pattern across agencies in the number of reported pesticide-related incidents. Washington State Department of Agriculture complaints increased from 1999 to 2002, and then dropped back to 2001 levels in 2003, while DOH cases appear to have leveled out after a spike in 2000. The number of L&I pesticide-related claims dropped in 2002 but was back up in 2003. The number of pesticide-related calls to WPC continues to decline.

Overlap of Pesticide-Related Events by Agency

Each agency's responsibility for responding to reports of pesticide-related incidents is outlined as follows:

- The WSDA investigates complaints about misuse or misapplication, licensing, and structural inspections. Washington State Department of Agriculture enforces the language on pesticide labels and coordinates with L&I WISHA to enforce the Worker Protection Standard for agricultural workers.
- Ecology investigates and enforces remediation of incidents involving spills or environmental contamination by pesticides.
- The DOH investigates reported cases of suspected pesticide-related illness.
- Department of Labor and Industries WISHA conducts safety and health workplace inspections in agriculture/industry and investigates employee complaints and referrals from agencies and others. Washington Industrial Safety and Health Act (WISHA) enforces the Worker Protection Standard for agricultural workers with WSDA.
- Department of Labor and Industries Claims Insurance Services Division adjudicates worker compensation insurance claims related to pesticide exposures.
- The WPC provides information and medical advice to the public and to health care providers who call about pesticides.

Table 5. Pesticide Incidents Reported to Agencies and Calls Made to WPC, 1999 - 2003					
	1999	2000	2001	2002	2003
WSDA Complaints	192	199	225	255	222
Ecology Complaints	-	63	35	46	33
DOH Incidents	271	302	200	216	242
DOH Cases	332	388	250	270	275
WISHA Inspections	37	34	27	64	22
L&I Claims	183	180	129	109	133
WPC Calls	2523	2326	2171	2043	1937

Pesticide-related cases are referred between PIRT agencies when appropriate. For instance, if a WSDA investigation into a pesticide label violation finds a worker who was ill, the case is referred to DOH. If a DOH investigation finds a label or safety violation, it is referred to WSDA or L&I WISHA. L&I claims related to pesticide-exposure are reported to DOH. These referrals result in overlapping agency data for cases involving pesticide-related illness.

As the state agency responsible for investigating cases of pesticide-related illness, DOH has formal arrangements with L&I, WSDA, and WPC to receive reports of suspected pesticide-related illnesses and injuries. With these arrangements, DOH data are the most reflective of human pesticide-related illness in the state.

Aggregation of PIRT Data

The overlap in pesticide-related cases between agencies for 2002 and 2003 are illustrated in Tables 6 and 7. The shaded numbers show the total number of incidents reported to PIRT by each agency. The other cells in the tables indicate numbers of incidents reported by multiple agencies. For example, in 2002, WSDA responded to 255 complaints about incidents involving a pesticide application. Thirty-five of these incidents involved a human illness and were co-investigated by DOH, and two involved workers who filed L&I claims. The Ecology Spill Program referred three incidents to WSDA in 2002. Not illustrated here are the five incidents (in 2002) and seven incidents (in 2003) that WSDA referred to Ecology programs other than the Spill Program.

Table 6. Overlap of Pesticide-Related Events* by Agency, 2002

	WSDA	Ecology	DOH	L&I	WISHA	WPC
WSDA	255	3	35	2	-	-
Ecology	3		1	-	-	-
DOH	35	1	270	109	5	106
L&I Claims	2	-	109	109	3	
WISHA	-	-	5	3	64	-
WPC	-	-	106	-	-	2,043

Table 7. Overlap of Pesticide-Related Events* by Agency, 2003

	WSDA	Ecology	DOH	L&I	WISHA	WPC
WSDA	222	2	23	2	-	-
Ecology	2	33	-	-	-	-
DOH	23	0	275	133	4	122
L&I Claims	2	-	133	133	4	
WISHA	-	-	4	4	22	-
WPC	-	-	122	-	-	1,937

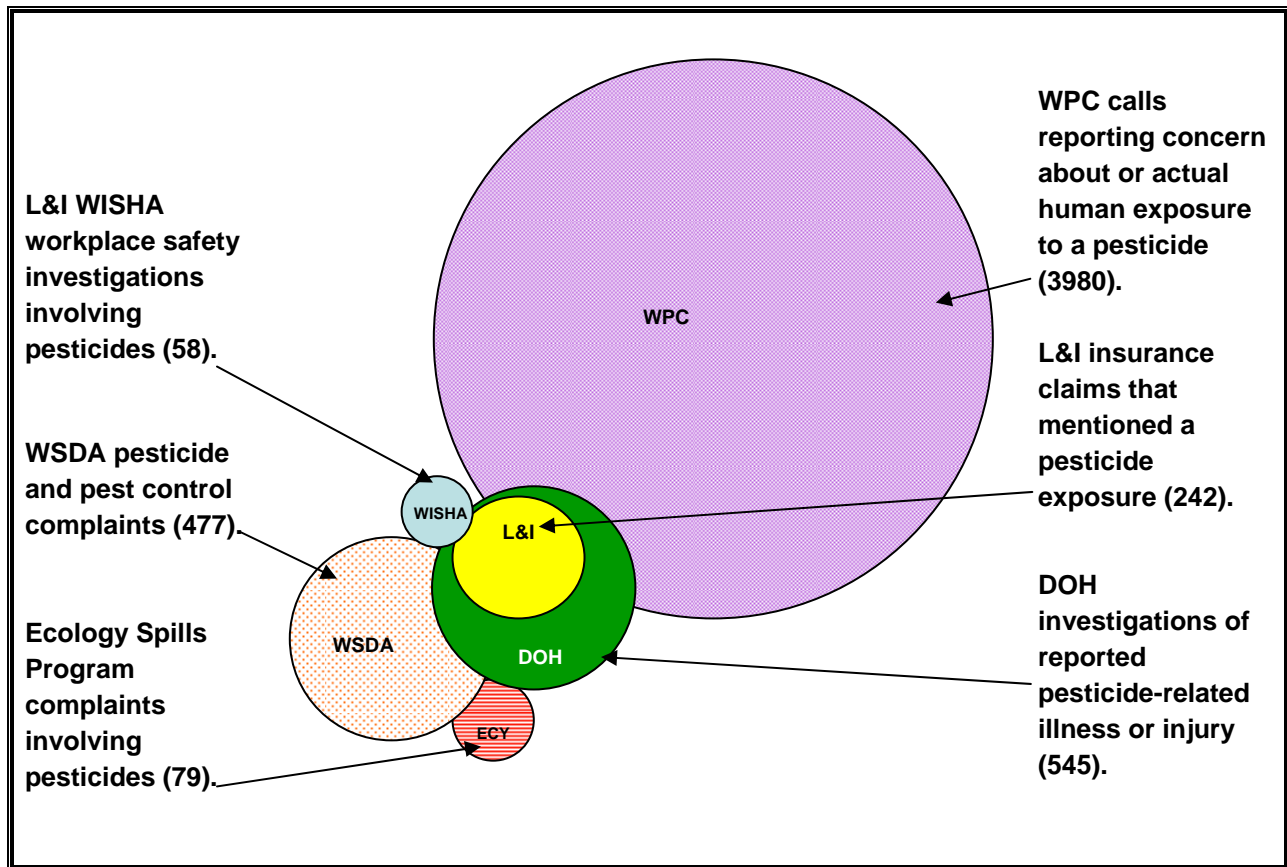
* Events include WSDA complaints, Ecology complaints, DOH cases, L&I claims, L&I WISHA inspections, and WPC calls.

Aggregation of PIRT data is problematic because each agency collects a different type of data. For example, data from the Ecology Spills Program includes both actual environmental contamination and calls from concerned neighbors about pesticide use that turned out to be legal. Data from WPC includes calls about human exposures with and without associated illness. The WSDA data includes actual violations, cases of crop damage, complaints about inadequate pest control inspections, and problems with licensing of pesticide applicators. Additional information about the limitations of each agency's data is described below in

Strengths and Limitations of Agency Data

Figure 1 displays how the PIRT agency datasets overlap. Agency data were combined for the years of 2002 and 2003.

Figure 1. Overlap of PIRT Member Agencies Pesticide Related Events, 2002 and 2003



Strengths and Limitations of PIRT Data

PIRT Agency data allow stakeholders, regulatory agencies, and policymakers to monitor trends in reported pesticide incidents in Washington State. Difficulties associated with aggregating agency data center around the different types of information each agency collects. This section provides a review of the strengths and limitations of PIRT Agency data for Departments of Agriculture, Health, and Labor and Industries. A section is included that addresses limitations in comparing rates of pesticide-related illness to other states.

Washington Department of Agriculture

Washington State Department of Agriculture investigates all complaints received by the agency regarding possible pesticide misuse, storage, sales, distribution, applicator licensing, and building structure inspections for wood destroying organisms. In addition to investigating complaints, the agency also inspects marketplaces, importers, manufacturers, and users of pesticides for compliance with state and federal laws and regulations. These inspections can be unannounced.

When investigating a complaint, WSDA collects legally defensible information regarding the circumstances to determine if there has been a violation of state or federal pesticide regulations. Samples are taken under chain of custody procedures to determine if off-site residues are present, applicators and complainants are interviewed if applicable, and a detailed case report is prepared

for possible legal action by the agency. Information is entered into a database for each case to enable later retrieval for analysis.

Washington State Department of Agriculture follows the penalty matrix for any legal actions as specified in WAC 16-228-1130. Generally, first offenders or minor infractions are given a Notice of Correction and a period of time to come into compliance. The penalties can escalate to \$7,500 per violation and 90 days license suspension or revocation.

Strengths. The WSDA actively works to inform the public, in both Spanish and English, on how to report complaints to the agency. A toll-free line and the ability to file anonymously facilitate reporting and investigation for situations in which the complainant may fear reprisal.

All cases are submitted to internal case review to assure consistency and provide legal validation. Data from investigations and inspections give the agency a fairly broad picture of the scope of pesticide misuse in the state. This assists WSDA in preparing training programs to prevent further misuse. Training efforts, along with a strong regulatory program, assist in deterring future violations.

Limitations. By policy, case investigations are usually complaint-driven. Washington State Department of Agriculture investigates suspected violations observed by inspectors but the majority of investigations result from complaints. A suspected pesticide misuse must be reported to the agency and investigated before preventative actions can be developed. Violations such as damaged plants in drift complaints may be obvious, but conclusive proof of identity of the violator may be more difficult to obtain.

The WSDA does not compare complaints with the number and type of violations because this does not give an accurate picture of the extent of pesticide misuse. In many investigations, the legal action taken may be unrelated to the original complaint. For example, a complaint about alleged drift may result in identifying problems unrelated to the original drift complaint.

Obtaining a baseline of the number of pesticide applications and the types of pesticides used is prohibitively expensive and probably only of statistical interest. Without a baseline, WSDA PIRT data should not be used to evaluate comparative risks of pesticides. However, the data can be effectively used to evaluate circumstances surrounding reported pesticide product misuse and to provide target areas for training.

Washington Department of Ecology

Pesticide-related data from three Ecology programs are included in this report: Spill Prevention, Preparedness, and Response Program; Water Quality Program; and Toxics Cleanup Program. These programs track data on pesticide spills, on the use of pesticides to protect water quality, and on the cleanup of pesticide contamination.

For each pesticide-related case investigated by the Spill Response Program, Ecology collects general information including the source of the complaint, location of the complaint, a description of the incident, and how the complaint was resolved. Ecology also tracks data from Toxic Cleanup sites involving pesticides and the progress in remediation of those sites. Ecology records information pertaining to the environmental impact of incidents.

Strengths. Data from Ecology programs can be used to understand trends related to the release of pesticides into the environment. Trends pertaining to the source of the complaint, location of the complaint, incident descriptions, and how the complaint was resolved, assist Ecology in understanding the extent and type of damage to the environment that results from pesticide releases.

Limitations. Ecology data have several limitations. The pesticide incident data are recorded by spill response staff and entered into a limited database that focuses exclusively on spills and complaints. Ecology staff are not always able to collect enough detailed information on complaints to document that pesticide contamination occurred. Many incidents affecting humans are directly referred to DOH and/or WSDA and no further investigation is conducted by Ecology.

Environmental impacts are not always documented for long-term effects unless that site is designated a contaminated site and information is entered into the Toxics Cleanup database.

Washington Department of Health

The Department of Health Pesticide Program investigates reports of illness related to pesticide exposure. Data collected from the investigations are used to identify public health problems and develop strategies for prevention. For each case investigated, DOH collects information on the event (equipment and applicator description, application target, purpose of the application, application site, pesticide products involved); and on the exposure (patient demographics, description of the exposure, activity at time of exposure, type of exposure, route of exposure, medical information).

Strengths. This level of detail for each case allows for the identification of trends and risk factors associated with pesticide illnesses. The information can be used to develop evidence-based prevention policy and outreach.

Department of Health uses a standard case classification protocol for determining the likelihood that the symptoms reported are related to the pesticide exposure. All investigated cases are submitted to internal case review to assure high quality and consistent coding of pesticide illness cases.

Limitations. The DOH data have several limitations. The pesticide surveillance program investigates acute illnesses and injuries only. It does not investigate chronic or latent effects of pesticides. Department of Health is not always able to collect enough information during follow-up on reported cases to document the case. Such cases are entered into the central database but are not included in most analyses of DOH data. Further, not all acute cases of pesticide illness are reported to the illness surveillance program. The case may not be reported if the sick person does not seek health care, if the person seeks health care but the health care provider fails to recognize it as pesticide-related illness, or if the health care provider does not report the case as required. Delays in DOH receipt of reports may result in reduced opportunities for obtaining complete information about a case.

Reporting limitations. Washington State recently undertook a 3-year study in an agricultural region to identify barriers to reporting and possible remedies. The National Institute for Occupational Safety and Health (NIOSH) funded study included a review of medical records for area clinics and hospitals. Of the cases where an agricultural worker sought health care for a

pesticide-related illness and was assigned a pesticide-related ICD code, only 60% were reported to DOH. Additionally, it was found that many pesticide-related cases are assigned less specific diagnoses such as “rash” or “eye injury.” The DOH has not been able to determine what proportion of these cases the surveillance system captures. Also, the proportion of under-reporting for non-occupational or non-agricultural pesticide exposures has not been determined. The full report, *Improving Data Quality in Pesticide Illness Surveillance*, is available on line at http://www.doh.wa.gov/ehp/oehas/publications%20pdf/Improving_Data_Quality_in_Pesticide_Illness_Surveillance-2004.pdf.

Washington Department of Labor and Industries WISHA Services

Under WISHA, Department of Labor and Industries staff address safety and health issues in the workplace. All complaints and referrals received by the agency regarding possible hazards to employees including those that may allegedly be related to pesticide use or misuse are investigated. The department also initiates programmed workplace inspections for compliance with state laws and regulations pertaining to worker health and safety. These may be comprehensive, evaluating the complete safety program, or partial, focusing on a particular area of concern. Statute requires that the investigations be unannounced. Free confidential consultations also are provided to employers that request information about deficiencies in their health and safety programs. This information is not accessible to the public and is not included in this report.

The WISHA enforcement staff may issue citations to employers based on the investigation findings. Citations may be categorized as “serious” or “general” depending on the possibility that an employee could suffer death or serious physical harm. These citations require employers to correct hazards in the workplace. Serious violations can have penalties assigned with periods for abatement specified and interim protection required for the exposed employees. Follow-up inspections may be performed to assure compliance.

Strengths. During an inspection, WISHA investigators collect legally defensible information to determine if employees are, or have been exposed to hazards resulting in a violation of state or federal health and safety regulations. Samples may be collected under chain of custody procedures to determine exposures, employees are interviewed if applicable, and a detailed report delineating any violations of health and safety regulations is sent to the employer. Information is entered into a database for each inspection. Employers receive information regarding hazards to their employees and violations of regulations. The data reflect the agency mandate to protect worker health and safety. The database is instrumental in preparing training programs and directing outreach to employers, identifying areas of concern and targeting future inspection efforts. A strong regulatory program assists in deterring future violations.

The WISHA actively works to inform the public on how to report concerns or complaints to the agency. A toll-free line, online complaint forms, and the ability to file anonymously facilitates reporting and investigation for situations where a complainant may fear reprisal. Additionally, alleged discrimination against employees filing complaints can be investigated.

Limitations. By policy, WISHA inspections are generally initiated by a complaint or by a targeting plan. On rare occasions, employers may be investigated as a result of observations by inspectors. Not all workplace use of pesticides can be evaluated. A suspected pesticide misuse must come to the attention of the agency and be investigated before information regarding possible prevention and other actions can be developed.

As with data from other agencies, a referral or complaint about alleged hazard to workers may result in identifying pesticide-related problems unrelated to the initial complaint. WISHA workplace evaluations represent a “snapshot” in time and may occur in any industry that has employees. Activities that are actually occurring or can be assessed through interviews and program review are evaluated. The investigator usually determines violations that can be documented during the investigation and, in many cases, violations may be unrelated to the original complaint. It may not always be possible to collect enough detailed information on complaints to document regulatory violations. Investigation data involving pesticides are recorded and entered by hand into a general database including all WISHA investigations. The complexity of investigations, data storage, tracking, and retrieval issues such as determining which specific regulation or law was cited, if a citation was issued, or what to track if no citation action was taken, make it difficult to identify data related only to pesticide use. Tracking the original complaint to the enforcement action taken, and comparing information based on the original complaint may not give an accurate picture of the extent of hazard to workers from pesticides. The report must be looked at in its entirety for comparison purposes.

Department of Labor and Industries, Claims Administration Program

Department of Labor and Industries claims staff administer Washington State’s Industrial Insurance Program which protects workers and employers from the financial impact of work-related injury or disease. Claims are filed by employees and their medical providers for workplace related injuries or illnesses.

Strengths. For each claim, L&I collects information from the employee, employer and medical provider on how the potential injury or illness occurred, any chemical exposure, and employer information. Claim information is filed in a central location for work related injuries. When a claim is filed it can have several outcomes. The claim may be approved. The medical provider may be paid and the claim denied if insufficient evidence of current disease is identified, but the medical provider costs are paid if the information is used to assess the claim status, even if it is denied. This may act as documentation for claims of future disease with a long latency period such as cancer. Many exposure incidents are assessed and claims may be approved if disease or injury is present and can be linked with workplace exposure. Within L&I, the Chemical Related Illness section evaluates claims data for clusters and other information that may be related to chemicals including pesticides. In conjunction with the WISHA investigations data, this provides access to a wealth of information that can be linked. This information can be used to identify trends for developing new regulations and evidence-based prevention policy and outreach. This situation is unique in the United States and allows for the identification of trends and risk factors associated with pesticide illnesses. It also can be used to identify concerns and target efforts for additional data collection efforts such as gathering data on organophosphate and carbamate pesticides that depress cholinesterase levels.

Limitations. Department of Labor and Industries claim data have some limitations. Department of Labor and Industries relies on the employee, employer, and medical provider to screen and identify work related injuries and illnesses. The illness or injury may not be identified if the sick person does not seek health care, if the employee seeks health care but the medical provider does not recognize the work-related illness, or if the employee seeks health care but the medical provider does not file a claim as required. Injury descriptions may be inadequate to assess links to workplace exposure and not all claims are investigated by WISHA. The WISHA focuses on claims where complaints or referrals are filed, or an employee dies, or two or more employees

are hospitalized. So, WISHA follow-up to document employment related causes of exposure or violations of health and safety regulations may not occur. Chronic disease or latent effects of pesticides may be identified and investigated, but relating them to past workplace exposure can be difficult and sufficient data may not be available. Communication and coordination between claims, the medical provider, WISHA, the employee and employer is not always seamless. Sometimes it is not possible to collect enough information to document that the illness is related to a workplace exposure.

Limitations of State Comparisons

Currently, there are no reliable methods for comparing the burden of pesticide-related illness between states. Only eight states maintain pesticide illness surveillance programs, and the methods and effort directed to surveillance varies greatly between these states.

Rates of occupational pesticide illness among states that conduct pesticide illness surveillance have been calculated (See, for example <http://www.cdc.gov/niosh/topics/pesticides/pdfs/AJIM-2003-1.pdf>). These rates were calculated as the number of cases divided by the total full-time equivalency (FTE) in agriculture reported by the Bureau of Labor Statistics (BLS). However, the FTE estimates do not differentiate between types of workers and may include workers that do not work with pesticides. The proportion of the reported FTE that actually are workers at risk of pesticide exposure would likely vary by the type of crops and farm management practices, which vary between states.

Given the systematic differences between states in both the meaning of the BLS FTE statistics and differences in the proportion of occupational cases captured by the state surveillance systems, the resulting crude rates are not likely to be reliable indicators of underlying risk.

Some researchers have generated estimates of the burden of pesticide-related illness across states based on the number of pesticide poisonings reported to state poison control centers. Crude rates for 2001 were computed by dividing the number of reported occupational cases by the total working population. Using this method Washington ranked sixth for the highest crude rate of pesticide poisoning reported to state poison control centers. This comparison does not account for differences in the use of poison control centers by individuals or physicians treating patients. Washington is the only state that directs health care providers to call the poison control center to fulfill the pesticide-illness reporting requirement under the notifiable conditions rule. This has likely generated higher numbers of pesticide-related calls to the poison center. Further, poison center data alone may not be a reliable source of occupational pesticide exposure. In Washington, over 80 percent of all reported occupational pesticide cases are identified by the Department of Labor and Industries.

Even if the appropriate data were available to generate reliable pesticide illness rates for each state, such comparisons would do little to improve programs and reduce risks in Washington. Some states may have higher actual rates because agricultural practices are more labor intensive, require higher applications of pesticide, or use more persistent active ingredients, more toxic chemicals, or chemicals which may be transported farther from the point of application. More helpful would be an analysis of relative risk of illness and injury among workers harvesting different crops, workers using products with different active ingredients, and workers using different levels of personal protective equipment. While gathering data to make these comparisons would be costly, they would generate more useful information for prevention than simple comparisons between states.

Agency Response Times

Revised Code of Washington (RCW) 70.104.080 (Appendix A) specifically directs the PIRT Review Panel to monitor agency response time to pesticide-related complaints for the departments of Agriculture, Health, and Labor and Industries. Response time is defined as the interval between initial receipt of a complaint and an agency's first response to the complainant. The first notification is usually by telephone, followed by a personal contact. Agency response times for 2002 and 2003 are listed in Table 8. The DOH noted a decrease in response time for 2003 and is taking corrective action.

Table 8. Agency Response Times 2002 and 2003		
Agency Mandates	Agency Response Times	
	2002	2003
Agriculture <ul style="list-style-type: none"> • Immediate response when complaints involve humans or animals • All other complaint investigations must be initiated within 48 hours 	<ul style="list-style-type: none"> • 100% of human exposure cases within 24 hours • 97% of all cases within 24 hours 	<ul style="list-style-type: none"> • 100% of human exposure cases within 24 hours • 93% of all cases within 24 hours
Health <ul style="list-style-type: none"> • Hospital admission, death, or threat to public health within 24 hours • All others within 48 hours 	<ul style="list-style-type: none"> • 2 severe occurrences within 24 hours • 97% within 48 hours 	<ul style="list-style-type: none"> • 1 severe occurrence within 24 hours; 1 within 48 hours • 89% within 48 hours
Labor and Industries (WISHA) <ul style="list-style-type: none"> • Serious complaints within 30 days • All others within 120 days 	<ul style="list-style-type: none"> • Majority within 30 days • All within 120 days 	<ul style="list-style-type: none"> • Majority within 30 days • All within 120 days